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INNOVATIONS IN FINANCIAL MARKETS: IMPLICATIONS FOR RURAL DEVELOPMENT

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Abstract

A paradoxical situation has emerged in rural financial markets in low income countries in recent years. Most programs implemented to extend the frontier of formal finance into rural areas have failed at the same time that informal finance has thrived. This paper explains this paradox in terms of asymmetric information and transaction costs. A number of new innovations have been developed in microfinance which involves lenders, frequently NGOs, making small short-term loans to poor urban borrowers. The nature of these innovations is outlined. Although the microfinance results suggest possibilities for resolving the problems afflicting rural and agricultural finance, there are concerns about how far these new innovations can be extended beyond urban areas. Several of these concerns are discussed.

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Richard L. Meyer and Geetha Nagarajan[1]

I. Introduction

The pace, speed and pattern of rural development are influenced by the efficient functioning of markets. Financial institutions, formal and informal, represent part of the essential institutional infrastructure required for the efficient operation of markets. Efficient financial markets facilitate arbitrage, help evaluate assets based on their future returns, provide insurance to hedge against future contingencies, and intermediate between investors and savers leading to capital formation at aggregate and individual levels. Limited access to financial services - credit, deposit and insurance - due to inefficient financial markets can constrain economic development (Fry, 1988). Although deposit mobilization and insurance services are important, credit is often presumed to be important to spur rural development in developing countries. This assumption has resulted in many state interventions including creating, restructuring and regulating financial institutions. Several types of market failures found in rural areas suggest reasons for government interventions to improve access to credit, but the state of empirical evidence makes it impossible to determine situations in which intervention can be unequivocally proscribed and its consequences fully anticipated (Besley, 1994; Stiglitz, 1992).

Concerns about the impact of differential access to credit have focussed on three sets of issues: (i) limited access to credit constrains liquidity leading to a loss of production at the aggregate level and a loss of income at the household level, (ii) credit is a consumption smoothing mechanism so limited access results in food insecurity and imperfect consumption smoothing, and (iii) imperfect access to credit leads to increased income and wealth inequality, thus undermining the effect of agrarian reform and other measures intended to reduce wealth inequalities. Several important case studies shed light on these issues, but few definitive conclusions exist to resolve them. Many evaluations of credit programs employing traditional impact assessment methodologies are unreliable since they do not fully account for the fungibility of loans, and fixed and variable effects due to borrower and institutional self-selection (David and Meyer, 1979; Pitt and Khandker, 1995; Von Pischke and Adams, 1980).

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An important factor influencing access to formal credit is collateral, the asset the borrower pledges to forfeit in the event of loan default. In the absence of complete information about borrowers, banks require collateral either as a mechanism to enforce loan payment (Plaut, 1985), or as a screening device to sort borrowers of varying riskiness (Bester, 1985). Small farmers, the poor and the landless have fewer assets acceptable as collateral so they are more likely than the rich to be credit rationed. Furthermore, land reform often disrupts the value and transfer rights of land, the asset most acceptable as collateral, so land reform beneficiaries and landowners subject to reform are also often credit rationed. Land acquired in Africa through traditional land rights and land obtained in Eastern and Central Europe through restitution of collective farms may be unacceptable as collateral because of the lack of clear ownership title. As a result, limitations in collateral limit access to credit for borrowers, limit investment opportunities for banks since there are few safe enterprises and hence profits, and limit the flow of resources between investors and borrowers contributing to slow economic growth (Balkenhol and Schutte, 1996).

Informal financial arrangements, however, employ a variety of collateral substitutes so some borrowers who are rationed in the formal credit markets are able to borrow informally. Moreover, many NGO credit programs have employed innovations that substitute for collateral so they have been able to service many borrowers, especially in urban areas, frequently denied access to formal loans.

The purposes of this paper are to review how the performance of financial markets is interrelated with rural and agricultural development, to discuss the role and limitations of informal financial arrangements as a substitute for and complement to formal finance, and to explore how financial innovations have attempted to resolve some of the traditional problems faced by financial institutions operating in rural areas. Because of space limitations we limit our discussion to credit services recognizing that, in many circumstances, savings service may be more important and can be crucial to creating viable institutions. The paper ends with a discussion of the limitations of these innovations and the need for future experimentation to improve financial market performance.

II. Finance and Rural Development

It was assumed in the 1950s and 1960s that farmers lacked access to formal credit, that informal lenders were exploitative, and that short-term high cost informal loans were unsuitable for financing the productive investments essential for sustainable rural development. Therefore, supply-led subsidized and/or targeted credit programs were implemented through formal financial institutions in many developing countries. Although the shortcomings of these programs are well documented (ex. Adams, Graham and Von Pischke, 1984), analyses of their impacts on agricultural and rural development have resulted in conflicting interpretations.[2]

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[2] A detailed discussion about the rationale for creating agricultural development banks, the reasons for their frequent failure, and the specific conditions under which their continued support might be justified can be found in Gonzalez-Vega and Graham (1995) and in Graham (1995).

Contradictory arguments have been presented about the role of credit in agricultural and rural development. Some analysts believe that improved agricultural performance in developing countries requires multiple reforms beginning with reforms in the credit market. An important issue concerns the impact of credit on farm output and income. Higher input expenditures by farmers in Pakistan were attributed to greater access to credit (Qureshi, Nabi and Faruqee, 1996). Rationed access to credit was one explanation given for the correlation of per acre profits with farm size in Kenya (Carter and Wiebe, 1990). Likewise, financial constraints and the absence of insurance generated market failures in western Sudan contributing to wealthier farmers obtaining higher yields than poorer ones (Kevane, 1996). A study of the impact of targeted formal credit on small farmers in Pakistan indicated that borrowers produced 93 percent more output and had net incomes 86 percent higher than non-borrowers (Sial and Carter, 1995). Incorporating individual fixed effect characteristics, the study showed that a borrower receiving an average sized loan from a bank would produce 38 percent more output than a non-borrower. An individual farmer selected at random with zero formal credit was regarded to be capital constrained and had a shadow price for loans estimated at a 147 percent rate of return on the first unit borrowed. Other analysts, however, argue that credit market reforms may be important but credit constraints do not necessarily lead to a decline in agricultural output, income inequality and rural poverty (Braverman and Stiglitz, 1989; Eswaran and Kotwal 1989; Feder et al. 1989).

Other researchers argue that changes in land and product markets can affect the demand for, access to and the cost of credit through their impact on loan collateral. For example, a study of Paraguayan agriculture suggested that the provision of land titles would have positive credit and investment demand effects, but the effect would be most pronounced for larger farmers (Carter and Olinto, 1996). Credit was not considered a primary constraint for rural development in India because the majority of rural households that demanded credit had access to formal and informal sources. The observed low demand and limited access to credit were related to the limited availability of land for productive investment and a high degree of land fragmentation (Kochar, May 1993). Although bank credit was significantly associated with farmers' ability to undertake productive investments, limited access to formal credit did not significantly affect the probability of leasing land implying that credit constrains did not bind rural households in their production decisions. The estimates suggested, however, that access to formal credit was more limited for small than for large farmers (Kochar, 1992).

Research in India revealed that the impact of expanded supply-leading formal agricultural credit on total agricultural output has been modest. While the program benefitted the non-farm sector through higher employment and wages, the benefits of credit in the form of increased agricultural income were estimated to exceed the costs of the subsidy provided only if optimistic assumptions were made about repayment rates on farm loans.[3] The output effect of expanded formal rural finance on the agricultural sector was much smaller than on the non-farm sector. Although

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[3] The rapid expansion of commercial banks into rural areas was estimated to have a positive effect on rural non-farm employment and output. Better banking facilities contributed to the location of non-farm activities in rural areas.

formal credit increased the use of fertilizer and fixed capital investments, the increase in output was insignificant. The additional capital available through credit was used to substitute for labor rather than for increasing output (Binswanger and Khandker, 1995).

Feder, et al. (1990) showed that supplying additional formal agricultural credit in China would increase agricultural output of credit constrained households only if access to agricultural inputs was not constrained. The supply of formal production credit to credit constrained farm households did not significantly affect farm output but was associated with increased overall output from both farm and non-agricultural activities.[4] This result confirms that formal loans targeted towards production activities are fungible; production credit was diverted to consumption and non-farm investment so the expanded supply of formal credit had less output effect on agriculture sector *per se*.

Studies in Latin America showed that efforts to increase farmer access to formal credit were poorly implemented and the results were dismal. Because of artificially low interest rates, cheap formal credit was concentrated in the hands of a few wealthy borrowers. Government programs that directed cheap credit through formal institutions diverted attention from technological innovations, infrastructure development, and human capital formation resulting in reduced resource productivity (Gonzalez-Vega, 1994). These empirical results raise questions about emphasizing credit as a primary policy instrument and reinforce arguments which suggest that financial reforms should follow rather than precede reforms to develop infrastructure facilities and factor and product markets (Gonzalez-Vega, 1995; Kochar, 1993; Meyer and Larson, 1997).

The reasons given for the many problems observed in formal credit programs include market imperfections and asymmetric information that make borrower screening, monitoring and contract enforcement difficult (Hoff and Stiglitz, 1990). Due to these problems, traditional lenders rely on collateral-based lending technologies to screen borrowers and enforce contracts so borrowers with little or no acceptable collateral are often credit rationed (Balkenhol and Schutte, 1996; Nagarajan and Meyer, 1995). Moreover, formal financial markets often are unable to service small borrowers and savers due to high transaction costs and they do not provide insurance options through state contingent contracts. The collapse of many rural financial institutions in developing countries and their sluggish response to programs to liberalize and privatize rural financial markets have raised doubts about the ability of formal finance to effectively serve rural needs (Meyer and Nagarajan, 1992). Meanwhile, informal finance has emerged or reemerged in several countries to provide the missing financial services. Informal financial arrangements have successfully developed mechanisms to reduce the information and collateral problems encountered in serving clients with limited conventional collateral.

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[4] One additional unit of formal agricultural credit to credit constrained household increased farm output by 0.235 units in China (Feder et al., 1990).

III. The Role and Limitations of Informal Finance

Informal finance consists of a heterogeneous set of individual and group financial arrangements. Information and transaction cost advantages available to lenders, savers and borrowers because of close proximity and informal procedures contribute to the production of a variety of informal financial services, especially for the poor who lack access to formal finance. These services include loans, deposit and savings opportunities, and insurance.

Informal finance is used by the rich and the poor, but often it is the only financial source for the poor while it is an alternative source for the rich. Informal finance may be the only viable financial source in the short-term, but it may also have certain information and cost advantages so it will continue to exist even when the formal financial system becomes more developed. The active ROSCAs among bank employees in Egypt (Baydas et al., 1994) and among rich and poor households in Taiwan to accumulate durables (Besley and Levenson, 1996) is evidence that informal finance continues to exist even when formal finance becomes readily available.[5] Despite massive amounts of funding for supply-leading credit programs, informal finance in the Philippines has reemerged as the predominant source of rural finance (Nagarajan, Meyer and Hushak, 1995). Similar trends are found in several other countries. The importance of informal finance and the innovative methods used by informal lenders and deposit providers are increasingly well documented (Adams and Fitchett, 1992; Ghate, 1992).

Some informal arrangements require collateral for loans (e.g., credit unions, pawnshops), but informal finance has frequently developed effective collateral substitutes using interlinked contracts, peer monitoring, and group lending. These mechanisms have successfully reduced moral hazard and adverse selection problems in some financial markets. Some arrangements involve individual lenders and borrowers, while others involve an individual lender working with a group of borrowers.

The use of interlinked transactions - land and credit, labor and credit, product and credit - as collateral substitutes has been studied in several countries, especially India and the Philippines. An interlinked transaction is one in which two individuals trade in at least two markets on the condition that the terms of all such trades are jointly determined. The complex interlinked transactions between landlords and tenants in agrarian societies have been well discussed (see Bell, 1988, for a survey). With the introduction of land reform abolishing traditional tenancy arrangements, such as share tenancy, and restricting beneficiary transfers of land ownership rights, the value declined for both share tenant labor and land offered as collateral. However, the modern technology that increased production also increased the demand for permanent labor and land cultivation rights, so new types of market linkages including product-credit, permanent labor and credit market linkages, and credit linkages through land pawning emerged to mitigate the collateral problems (Esguerra, Nagarajan and Meyer, 1993; Hayami and Otsuka, 1993; Nagarajan, David and Meyer, 1992). Furthermore, contract farming arrangements facilitate transactions in environments limited by land,

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[5] ROSCAs are group-oriented informal savings and credit mechanisms that operate in numerous developing countries (for a review see Bouman, 1995).

labor and capital (Glover 1990; Little and Watts, 1994). These linkages reduce the need for traditional collateral and use labor contracts, usufruct land cultivation rights, and the marketing of future production as collateral substitutes.

Offering financial services through groups is another frequently used informal finance mechanism to reduce moral hazard and adverse selection problems. The spontaneous formation of savings and credit groups, either rotating or non-rotating, provide low transaction cost savings and credit services in several developing countries (Bouman, 1995). The use of group credit as a means to transmit information about borrower creditworthiness and to reduce delinquency rates through peer monitoring is popular in informal and semi-formal finance (Nagarajan, Meyer and Graham, 1996; Stiglitz, 1990; Wenner, 1995).

Informal financial arrangements serve a broad clientele but informational problems often encourage specialization to improve the gathering of information on borrower creditworthiness and to reduce the need for physical collateral. Nagarajan and Meyer (1996) observed patterns in the matching of various types of lenders with borrowers in the Philippines based on their occupational specializations and the type of collateral involved. The patterns found suggest that market segmentation can limit competition. Although informal finance has found ways to alleviate collateral problems typically found in a land reform regime, it has not completely substituted for a well-functioning formal financial system. In this situation, informal finance is considered to be a stop-gap arrangement until formal finance can provide those financial services for which it has a comparative advantage.

By providing loans and deposit services, informal finance can provide insurance to smooth consumption but there are divergent views regarding this insurance feature.[6] Udry (1995) found risk contingencies in loan contracts from informal lenders that smooth consumption and provide insurance in Nigerian villages. Ouattara (1994) also observed contingent loan contracts among Gambian rural households which suggested the existence of full insurance among participants in the financial markets. In addition, socially cohesive groups in Madagascar are observed to provide credit insurance by pooling risks through diversifying the members' asset portfolio so that they can service their debts even when affected by high idiosyncratic risks (Zeller, 1996).

In contrast, informal credit markets may provide little insurance against income shocks if the cost of credit also reflects these shocks. If wage rates are invariant to income shocks, increased labor market participation may be an effective means to smooth consumption. Labor income was observed to smooth fluctuations in crop income better than did informal credit in India (Kochar, November 1993). For example, informal credit in India was estimated to cover only 11 percent of the shortfall

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[6] See Zeller et al., (1997) for a review of studies that relate financial markets to food security and consumption smoothing issues.

in rural household income (Rosenzweig, 1988).[7] While informal credit transactions were used to mitigate idiosyncratic risks faced by households, a fully Pareto efficient allocation of risk was not achieved. The Nigerian households had to use asset stocks to fully manage idiosyncratic risks over time (Udry, 1995). Furthermore, Schreiner, et al. (1995) showed that formal credit and deposits offered at more favorable rates than informal sources were able to smooth consumption better by producing a higher mean and lower variability of consumption.[8]

Informal finance clearly contributes to development because it is often the only source of financial services in isolated regions. Because of its limitations, however, its role as a substitute for formal finance and the rationale for expanding and improving it are subject to debate. Indeed, the limitations of informal finance arise from the same features that make it competitive with formal finance (Gonzalez-Vega, 1995). Information is improved through close proximity and engenderment of reciprocity, but the financial services provided are usually restricted to a limited geographic area so informal finance is susceptible to wealth constraints and covariate risks of the local economy (Christensen, 1993). Specialization facilitates the matching of borrowers and lenders, but the participants tend to operate in a segmented market with limited outreach. Informal lenders provide financial services for specific purposes in small amounts for short periods of time, but they fail to integrate markets (Nagarajan, Meyer and Hushak, 1995). Since the majority of informal lenders lend their own capital, they are less involved with formalities but are limited both in their resource base and their ability to lend long-term (Gonzalez-Vega, 1995).

Although informal financial services are valuable for poor businesses and households, their limitations encourage the search for innovations to expand the frontier of formal finance. Some important innovations are discussed in the next section.

IV. Innovations in Financial Markets

Many aspects of the supply-leading credit programs of the past were counterproductive in that they actually increased the costs and risks for financial institutions (Bhatt, 1988; Adams, Graham, and Von Pischke, 1984). The elimination of interest rate controls and lending quotas, and the liberalization and privatization of financial markets in many developing countries have created conditions in which cost and risk-reducing innovations have begun to emerge. New lending technologies and instruments are being used, especially among NGOs lending to the urban poor, so the financial frontier is expanding and today millions of poor people have access to formal financial services for the first time. Some innovations have been directed at reducing transaction costs for

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[7] The study generated these estimates through a regression of net indebtedness on income shortfalls for a sample of households in India.

[8] Using a numerical simulation model, the study incorporated income uncertainty, access to informal credit and deposits, intertemporal financial contracts, and the reality of credit limits and of differing rates of interest for saving and borrowing.

financial institutions and their clients (Meyer and Cuevas, 1992). Others have attempted to relax the collateral constraints that bear heavily on the poor. Schrieder and Heidhues (1995) noted that some innovations focus on changing financial systems and institutions, while others focus on creating new products and technologies. Many of the recent innovations have been created by NGOs rather than banks and were designed to facilitate lending to poor clients, especially women. Some innovations mimic the practices of informal finance.

The purpose of this section is to review some key financial innovations introduced in the past few years and assess their status with respect to serving rural clients. The section will first discuss lending experiences of institutions making traditional individual loans. Then experiences with group lending and village banking will be discussed. Emphasis will be placed on the two criteria that have emerged as being important in evaluating innovative lending: outreach and sustainability (Christen, et al., 1995; Yaron, 1992).

A. Individual Lending Technology

Surprisingly few financial institutions that specialize in making individual loans in rural areas are considered a success today. Indonesia is an exception because it has been particularly successful in creating financial institutions that penetrate rural areas, serve thousands of small savers, and make small individual loans to thousands of clients using market-based interest rates. The better known systems are the Bank Rakyat Indonesia (BRI) unit desas and the Badan Kredit Kecamatan (BKK). Although starting with quite different origins, both systems have become profitable by improving through trial and error over several years. Today each provides financial services to hundreds of thousands of poor borrowers and savers (Patten and Rosengard, 1991). Several less well-known institutions have also achieved impressive levels of outreach so that by the end of 1991 these organizations were serving over four million borrowers and over ten million savers in Indonesia.

Indonesia's dynamic economy and comparatively stable macroeconomic and political environment have contributed to a strong demand for credit and savings services which contributed to the emergence of these financial institutions and several key features of institutional design contributed to their successful performance (Chaves and Gonzalez, 1996). First, information problems have been resolved by establishing a network of semi-independent, locally operated financial institutions that have a comparative advantage in gathering information about clients, monitoring loans, and enforcing loan contracts. Most loans, therefore, are based on character rather than collateral. Second, to resolve the agency problem, incentives in the form of performance-based remuneration and efficiency wages have induced financial managers to behave in ways consistent with the financial health of the institutions. Third, mangers have been given considerable autonomy over interest rates and other key performance variables. Fourth, one-time subsidies in the form of start-up loans and grants nurtured the organizations without creating dependency on continuous subsidies. The modest levels of this support prevented the development of expensive fixed cost structures. Fifth, clients value their banking relationship due to rapid loan disbursement, low transaction costs, and the possibility of pledging nontraditional forms of collateral such as character references. Loan recovery is high because borrowers want to protect their reputations and their access to future loans.

The Bank for Agriculture and Agricultural Cooperatives (BAAC) in Thailand represents another interesting case because it is largely a government-owned bank specialized in lending to agriculture. It has slowly improved its performance over a twenty year period even though it has been forced to operate under some rules that have destroyed financial institutions elsewhere. These include interest rate ceilings and a prohibition against making non-agricultural loans. Conversely it has benefitted from special tax and other privileges. By the mid 1990s, it was reaching about 3.7 million farm households[9] representing over 70 percent of the farm population (Sacay, Randhawa and Agabin, 1996). About 2.6 million are registered as direct clients and the balance are reached through farmers' organizations. It employs an individual loan technology when making larger loans (over $2,400), requires two cosigners for loans from $1,200 to $2,400, and uses group joint liability for loans under $1,200 (Yaron, 1992). About 75 percent of its loans are now made under the joint liability group scheme. Unlike many of the group liability schemes discussed later, the groups can be as large as 50 borrowers. BAAC benefits by receiving deposits that commercial banks are compelled to make when they fail to meet rural lending targets established by the government. But it also engages in an intensive savings mobilization program including rural areas so that deposits are now the principal source of funds. Staff salary incentives are tied to savings growth and loan performance. Furthermore, BAAC has been able to reduce costs by achieving a large number of loans (approximately 200) and a relatively large outstanding loan balance per staff member (over $375,000)(Yaron, Benjamin, and Piprek, 1997). As in Indonesia, borrowers lose their opportunity to get a repeat loan if their repayment record is unsatisfactory. Recovery rates have been much higher for loans made to individual farmers that to cooperatives or farmers' organizations. Borrowers are reported to borrow informally in order to make their BAAC loan payments on time.

Sub-Saharan Africa is littered with failed rural financial institutions (Meyer, Graham and Cuevas, 1992). The World Bank recently conducted an analysis of six financial institutions in the region that had somewhat better performance as measured by outreach and sustainability (Gurgand, Pederson, and Yaron, 1994). They were located in Benin, Burkina Faso, Cameroon, Malawi, Rwanda, and Togo, and represented a mix of NGOs, government agencies, and credit unions. The six tended to serve clients normally excluded from formal financing: the rural poor, small holder farmers and women. Data were too incomplete, however, to make firm conclusions about loan recovery and sustainability. Because of the problem of enforcing legal claims and the lack of collateral by most clients, most organizations used some type of group liability lending which emerged as the potentially low-cost alternative for achieving high rates of loan recovery in the difficult economic conditions found in these countries.

A recent study evaluated the experience of 17 commercial banks, all but one privately owned, that are expanding into the micro and small loan market in developing countries (Baydas, Graham and Valenzuela, 1997). Most were initially supported by donor projects providing funds and/or technical assistance. Several are now reaching several thousand clients with loans ranging from 500 to several thousand dollars largely using their own resources. For many of these banks, small loans represent only a small share of their total loan portfolio, while a few specialize in serving this

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[9] But only three quarters of these may actually be borrowers at any one point in time.

clientele. Most offer savings services and the small size of their average deposits suggests they are serving many more poor savers than poor borrowers. Most use their standard individual loan technology but adjust it so small loans are disbursed quicker, with simpler procedures and more frequent loan installments. Loans are made largely to urban and periurban clients for nonagricultural purposes; loans for agriculture tend to finance food processing or livestock production rather than traditional crop farming. It is not yet clear how profitable these banks are in serving this market niche or if they can profitably penetrate further into agricultural lending.

B. Institutional Support for Individual Lending

Several innovations have been introduced to strengthen traditional individual lending and extend the formal financial frontier to borrowers with little loan collateral. Loan guarantee schemes, for example, have been widely used in developed countries and have been extended to developing countries to substitute third party guarantees for the collateral deficiencies faced by borrowers. These schemes have been implemented to benefit special groups such as exporters, micro businessmen, and women, and several were designed specifically for agriculture. The record of these schemes is mixed (Meyer and Nagarajan, 1996).[10] Many guarantees were designed but never implemented. Others have been unsustainable and simply represented subsidized lending dressed in different clothes. Impact studies have rarely demonstrated that much additional lending has occurred because of guarantees. In many cases, the lenders would have made the loans anyway but utilized the guarantee to reduce their risks. The basic problem is that guarantees do not resolve the basic information asymmetry inherent in lending. Furthermore, they introduce additional moral hazard and adverse selection problems and often increase transaction costs for borrowers and/or lenders. They must be designed with great care, therefore, to be successful in increasing additionality while avoiding large subsidies.

Inventory credit has been introduced in some developing countries as a means to increase marketing loans to farmers or traders (Coulter and Shepherd, 1995). The mechanism involves a third party, the warehouse operator, receiving produce, maintaining it in good condition, and assuring the lender that the loan collateral is secure. With the warehouse receipt, the farmer or trader obtains a bank loan and repays it when the produce is sold or consumed. If the loan is not repaid as scheduled, the lender can seize the produce and sell it. Although widely used in developed countries, the conditions have not been conducive in most developing countries for inventory credit.

Experiments have been conducted with the support of the German Agency of Technical Assistance (GTZ) to link self-help groups with banks. The methodology involves organizing potential borrowers into groups, then mobilizing their savings which are deposited in banks to serve as

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[10] An InterAmerican Development Bank seminar in 1996 reviewed the loan guarantee experience of several developed and developing countries. The key papers reflecting the generally negative conclusions are available in Llisterri and Levitsky (1996). A recent report by Doran and Levitsky (1997) covering small business guarantees is somewhat more bullish about the positive potential for guarantees.

collateral for bank loans made to the group in some multiple of the amount deposited. The group members are jointly liable for the loans similar to group lending discussed below, but in this case a bank makes the loan directly to the group or to a private voluntary organization for on-lending to the groups (Seibel and Parhusip, 1992). At the end of 1990, 26 banks were involved in this program in Indonesia, over 400 groups with over 7,000 members had received loans averaging $2,850 per group or about $165 per group member. Loan recovery was excellent and few subsidies were involved apart from small amounts of technical assistance. This effort was still too new, however, to fully evaluate its potential impact.

C. Group Lending Technology

The single most important innovation introduced in financial markets in recent years in developing countries is microfinance lending using a group or joint liability technology. The Grameen Bank, which began in Bangladesh in 1976, is often credited with this innovation (Hossain, 1988). Group lending is now widely used by many NGOs and some banks are experimenting with it. One of the important successes in group lending is BancoSol in Bolivia which was recently transformed from an NGO into a commercial bank. It reaches over 60,000 mostly urban clients today (Gonzalez-Vega, et al., 1997a). The organization out of which BancoSol was born, PRODEM, employs the same basic technology for lending in rural areas, but it is more dependent on subsidies than is BancoSol.

The basic concept of group lending is that a group of borrowers, often five in number, organize themselves into groups that offer joint liability for member loans. If one member fails to repay, all members are denied future loans. This technology is frequently targeted at the poor so joint liability serves as a collateral substitute. This feature is not sufficient alone, however, to ensure success of the technology.[11] Screening by members in group formation, peer monitoring of loan use and peer pressure for repayment are expected to reduce transaction costs and improve loan recovery for lenders.

Microfinance lenders commonly use a variety of techniques that contribute to the general success of group lending. They include:

1. Loan sizes - loans are small in size, are made for only a few weeks or months, and are made mostly for working capital purposes.

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[11] The theoretical literature contains models in which group liability lending produces peer pressure contributing to high repayment rates. In communities with a high degree of social connectedness, incurring the wrath of other group members may encourage a defaulter to repay and there may even be cases in which borrowers pay the installments of other group members in order to not lose access to a repeat loan. However, models can also be specified in which one borrower's knowledge of another's default will lead to collective default by the entire group (Besley and Coate, 1995).

2. Repeat loans - clients with good repayment records are rewarded with (almost automatic) repeat loans. In some organizations, the size of the first and repeat loans is set according to a pre-determined formula.
3. Loan repayment schedules - frequent payments are required, often weekly or monthly, to enable close monitoring of borrower performance.
4. Interest rates - interest rates and fees are high, usually much higher than those charged by conventional lenders, and are often positive in real terms.
5. Loan officer efficiency - loan officers frequently handle 75 to 100 groups representing 200 - 500 borrowers. Financial incentives encourage improved efficiency.
6. Peer groups - peer group formation and peer monitoring often take the place of conventional loan collateral.
7. Lending procedures - the procedures for screening applicants and processing loans are simple with considerable autonomy given to loan officers who are required to maintain close contact with their clients.
8. Loan delinquencies and losses - the lenders frequently report loan recoveries of 95 percent or more. Computerized systems are often used to produce daily repayment reports so that loan officers can take corrective action at the first hint of unexplained delay in their clients' payments. Some organizations offer interest rebates for on-time or early repayments.
9. Savings mobilization - some microfinance lenders require obligatory savings. Banks are most aggressive in mobilizing voluntary savings from microloan clients, while many NGOs rely entirely on lending resources provided by donors and other intermediaries.[12]

Although a number of microlending organizations have been operating for several years, are reaching thousands of clients, and are reducing their dependence on subsidies, in-depth comparative analyses are limited to Christen et al., (1995), Hulme and Mosley (1996), Schmidt and Zeitinger (1996), and Yaron, McDonald and Piprek (1997). Few studies systematically compare the design and performance of organizations operating in the same environment. An exception is the study by Gonzalez et al. (1997b) of five microfinance organizations in Bolivia. These five organizations are widely recognized as among the best in the country. Important insights were discovered in comparing group and individual lending technologies and rural and urban operations of the three organizations BancoSol, Caja Los Andes, and PRODEM.

BancoSol began as the NGO PRODEM but evolved into a licensed private commercial bank specialized in lending to the urban poor using a group lending technology. Caja Los Andes also started as an NGO and is now a licensed financial company making individual loans mostly in urban

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[12] An important debate in the microfinance field is the issue of appropriate rules and regulations for nonbank microlenders that mobilize savings. Many take savings illegally because only licensed banks have the authority to accept savings from individual depositors in many countries. However, savings services may be even more important for many poor people than loans, and savings can reduce the organization's dependence on subsidies.

areas.[13] BancoSol has been mobilizing savings for some time while Los Andes just began taking deposits. Both have received a large amount of foreign funds and assistance but could become independent of subsidies if they charged about a 40 percent interest rate on their loans. The average size of loan made is somewhat over $500 in both organizations, for a term of 20-30 weeks with mostly weekly or biweekly installments. Recovery rates are high in both organizations, but the reasons are quite different. In the group lending technology of BancoSol, the loan officer engages in very little loan screening. The process of group formation by the borrowers and peer pressure for repayment are largely responsible for ensuring high recovery. The loan officers repeatedly stress borrower responsibility with their clients prior to disbursement. All loan officers are paid a fixed salary. Group spirit and commitment to the organization's mission results in high levels of staff performance.

Los Andes, however, employs a more traditional individual lending technology in which the loan officer makes a detailed inspection of the applicant's residence and business, estimates debt repayment capacity and the value of assets offered as collateral, and adjusts the terms and conditions of the loans granted accordingly. Salary bonuses representing as much as or more than the base monthly salary are paid according to the loan officer's loan volume and client arrears rates. Therefore, the loan officer can earn a substantially higher salary than is possible at BancoSol but has a much greater responsibility in making the loan technology work. Both organizations devote a considerable amount of effort on staff training to both improve technical banking skills and inculcate new staff with the organization's mission and ideology.

The challenge of successfully adapting the group lending technology to rural areas was revealed by comparing PRODEM with BancoSol. They have strikingly similar features because of their common heritage but, after selling its urban branches to BancoSol, PRODEM had to adapt to servicing rural clients. It's average size of loans disbursed is smaller (just over $300) consistent with the greater degree of rural poverty, and it has a smaller number of clients per loan officer due to the greater travel distances involved. It grants loans almost exclusively with monthly repayment schedules in recognition of the high transaction costs incurred by rural borrowers in traveling to branch offices to make payments. It's dependency on subsidies has risen and it would have had to charge an interest rate of over 90 percent to be subsidy free in 1995. It is not yet clear, therefore, that PRODEM has adequately adjusted its technology to rural areas to achieve both outreach and sustainability.

Village banking is a type of group lending designed to enable poor communities to establish their own village level credit or savings association or bank (Nelson, et al., 1996). Several NGOs

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[13] These organizations have received a large amount of donor assistance. BancoSol and PRODEM have been an important part of the international network of ACCION and Caja Los Andes has received considerable technical assistance from IPC (Interdisziplinare Projekt Consult GmbH) in Frankfurt. This assistance has been instrumental in shaping their institutional designs. They were able to learn from experiences elsewhere and contributed their experiences to other organizations in their respective networks.

are introducing this model into developing countries. The NGO makes one loan to the bank which onlends to the village members. Village savings are intended to eventually substitute for the external funds. Small working capital loans are made for four to six months and peer pressure is used to encourage repayment. Loan sizes are linked to the amount that the borrower has saved. Village members disburse and collect all loans, manage their savings, elect their leadership, and determine their by-laws. It is widely believed that village banking reaches poorer clients than individual or other types of group lending technologies. But there are also suggestions that most village banking programs are highly subsidized and unsustainable.

V. The Unresolved Challenges of Agricultural Finance

The discussion presented in the previous section revealed that several important microfinance innovations have recently contributed to expanding the frontier of formal finance in developing countries. For the first time, large numbers of poor borrowers have access to formal financial services due to these innovations which appear to have most successfully penetrated urban and periurban areas serving borrowers engaged in a wide variety of nonfarm enterprises. Most microfinance lending in rural areas tends to finance trading, processing and livestock activities rather than crop farming.[14] Furthermore, many microlenders concentrate their portfolios in areas with high population density so loan officers can service a large client load. Even so, relatively few micro-finance organizations have achieved both a large outreach and subsidy independence. In this section we speculate on six sets of explanations why microfinance innovations have not yet made a significant impact on agricultural finance and rural development.

A. Financial liberalization.

Microfinance organizations have prospered best where financial liberalization has occurred. But several countries, especially in Sub-Saharan Africa, still have usury laws which prevent charging the high interest rates necessary for covering the cost of small loans. Lenders charging higher rates may be tacitly ignored as long as they serve only a few clients. They may not be tolerated, however, when their scale of operation becomes large or when they deal with a politically sensitive sector like agriculture. Furthermore, politicians in several countries have intruded into financial markets by promising debt forgiveness for farmers who claim production or marketing setbacks. To be successful, microfinance organizations serving agriculture must reverse the negative expectations about loan repayment that these political interventions have created among farmers.

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[14] Although microfinance organizations may know the borrower's intended or actual use of a loan, they often do not compile statistics on these uses because they do not target loans by purpose. Therefore, it is difficult to determine the activities or subsectors that may benefit from microfinance credit. The study by Hossain (1988) reported that in the period 1979-1986 the Grameen Bank never disbursed more than three percent of total loans made in any year to crop production and forestry. Most of the loans for both men and women were made for trading, shopkeeping, processing, manufacturing, fisheries, and livestock and poultry raising.

B. Agricultural policies.

As with any type of lending, microlending is often most robust in economies and in subsectors that are dynamic and growing. Agriculture is considered to be a strategic sector in many countries and policy makers frequently pursue policies designed to assure the supply of cheap food in cities even at the expense of reduced farm incomes and economic growth. Therefore farm clients are often less desirable for lenders than are nonfarm clients who face fewer restrictions and controls, whose enterprises may be more profitable, and who are not subjected to as many unexpected policy shocks. Policy makers have often imposed interest rate controls on agricultural loans to compensate for the negative impact of commodity price controls. For example, BAAC in Thailand must set interest rates charged for agricultural loans two or three percentage points lower than for nonagricultural loans. But these rates are often too low to cover lending costs and risks. Farmers have developed expectations about low rates and may resist paying the high rates routinely accepted by nonfarm borrowers.

C. Characteristics of loan demand.

Research has revealed the importance of nonfarm income for many low income rural households, particularly in Asia. Households with regular and frequent sources of income earned from short-cycle farming enterprises and nonfarm enterprises are best suited for the standard microfinance technology that employs frequent loan payments. Larger and more specialized farms, however, may experience greater seasonality in cash flows so they are better served by borrowing at the beginning of the production period and repaying in one lump sum at harvest. In this situation, the client and loan monitoring that occurs with frequent loan payments in microfinance breaks down and this may lead to higher loan losses.

D. Nature of the lending risk.

All lenders must adapt to the problems caused by the idiosyncratic risks faced by their borrowers. Loan extensions and rescheduling of payments are common responses to these problems. Agricultural producers, however, face greater systematic risk than do nonfarm producers because of production and marketing uncertainties that affect a specific geographic location. The covariance of income amongst producers implies that it is difficult for lenders, especially small localized ones, to diversify their loan portfolios. Many nonfarm enterprises in rural areas utilize agricultural products as raw materials and/or sell to agricultural producers; therefore, they are often affected by the same shocks that affect agriculture. Furthermore, if lenders mobilize a substantial amount of savings from their local borrowers, the depositor-borrowers who simultaneously experience a production or price shock will tend to withdraw their funds just at the time that loan demand rises and loan repayments are slow (Binswanger and Rosenzweig, 1986). It is also possible that the recovery time for damaged or destroyed nonfarm enterprises may be quicker than for crop and livestock producers who must wait for another production period to restart operations after experiencing losses.

E. Lending efficiency and costs.

Microfinance organizations can reduce their operating costs and subsidy dependence by reaching high levels of efficiency. Labor costs need to be spread over a large loan portfolio and this is achieved when loan officers service a large clientele and total volume of business. Lenders in rural areas have two disadvantages: the longer distances raise travel costs and limit the number of clients served per loan officer. Lending costs for all microlenders are high because loan sizes need to be kept small, at least initially, for each client to reduce lending risk. Rural borrowers may be granted somewhat longer term loans than nonfarm clients but this saving in operating costs may not fully compensate for the two cost disadvantages. For these reasons, rural interest rates may have to be set even higher than urban rates to cover full lending costs but farm enterprises may not generate returns high enough to cover these costs.

F. Collateral and collateral substitutes.

As noted above, some microlenders employ the standard individual lending technology using physical collateral to secure their loans. The collateral they accept is often some type of moveable asset with a high value in use for the borrower. Although there is a risk that this type of collateral may disappear or be destroyed, the successful lenders obtain some document representing ownership and hold that document against possible default. The threat of collateral loss is often adequate to ensure repayment. In rural areas, however, land is often the best collateral but, besides the legal difficulty of clearly demonstrating ownership, the legal provisions for foreclosure in event of default are cumbersome and expensive. Restrictions on the transfer of land received in land reform programs reduce its collateral value.[15]

Many urban microlenders rely on group liability lending as the most important collateral substitute for lending. An important condition for its use is effective group formation, peer monitoring of member behavior, and peer pressure for loan repayment. It also requires that the group members borrow approximately equal amounts so that the joint liability risk is roughly equal for all members. Peer monitoring is easier in urban areas where group members live and/or work in close proximity, but it is harder for farmers in dispersed settlements to effectively know other group members and monitor their behavior. Furthermore, if one borrower suffers a negative shock which prevents repayment, it is more likely in rural areas that other group members will suffer the same shock so no group member will be able to repay the loan of another member. Farmers may have more variable demands for loans making it more likely that a borrower with a small loan will not want to be liable for another borrower's much larger loan.

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[15] During one period in the Philippines, banks would only take urban land as collateral for loans made to farmers in land reform areas because of the legal restrictions on land transfers.

VI. Conclusions and Implications

This paper has focussed on innovations in lending technologies that have contributed to expanding the financial frontier so that large numbers of urban people have access for the first time to formal financial services. NGOs were largely responsible for innovations leading to expanded lending but now some banks are entering the field. Some of the new microlenders are successfully adapting the traditional collateral-based individual lending technology to a lower income clientele. Many more, however, are employing group lending, either exclusively or for their poorest clients. In the process of expanding the financial frontier, changes have been made in the terms and conditions under which loans are made. Many microloans are made for only a few weeks or months, and loan payments are required as frequently as once a week.

The new microlending technologies appear to be best suited to urban enterprises or to rural nonfarm households and firms that have regular and frequent cash incomes. They appear to be less appropriate for specialized farmers with highly seasonal cash flows. The scale of agricultural lending is still relatively small so it is unclear the extent to which these new technologies must be changed to fit most agricultural conditions. Most of the innovations have focused on risk reduction but further efforts are needed to reduce transaction costs that are expected to be higher in rural than urban areas. Lenders may have benefitted because of reduced transaction costs due to group lending but borrower transaction costs may be higher for group loans than for individual loans. Except in some urban locations, financial markets for the poor are highly segmented with each microlender serving a small market niche with only a few services. High information and transaction costs discourage competition and prevent the microlenders from rapidly expanding to serve new clients and regions.

Most of the microfinance innovations have emphasized credit. This is consistent with the widely held view that loans make a great impact on output and income. Much less attention has been placed on providing savings services even though a safe and secure place to deposit savings may be more important, especially for consumption smoothing in the absence of insurance markets, than is credit. This neglect of savings also reflects the fact that many microlenders obtain most of their resources from subsidized sources so the cost of mobilizing resources from clients seems high by comparison. Furthermore, savings mobilization in most countries is limited to regulated financial institutions but most microfinance institutions are not yet ready to make the transformation into banks. There are risks for depositors in keeping their savings in unregulated institutions and, although there is great debate over the appropriate role of regulation and supervision for micro-finance, there is little enthusiasm for adding these institutions to the responsibilities of under developed banking authorities. Some microlenders use savings as a screening technique by requiring that prospective borrowers regularly save for some time before they can borrow. These savings often cannot be withdrawn until the client leaves the organization so their value to the saver is diminished. Some organizations also require that borrowers deposit a portion of their loan into a guarantee fund for use in helping members deal with unexpected problems. In practice, these funds are also not easily accessible so their value is diminished for the saver. These guarantee funds may be an

important way to help lenders deal with the external shocks afflicting borrowers but their use has not been thoroughly researched.

Since the microfinance field is fairly new and even the oldest organizations are no more than 10 to 15 years old, relatively little is known about the capacity of microlenders to cope with adversity. Since many are dependent on donor or government resources, it is likely that these funds are used to cover losses and resolve liquidity constraints. Some second tier institutions exist to channel funds from surplus to deficit units and to wholesale government and donor resources to retailers. The role these second tier institutions play in promoting and strengthening microfinance is also just now beginning to be researched.

Most microloans are short-term and only a few microfinance organizations grant loans for as long as a year. Grameen Bank is one of the few organizations that is experimenting with longer term housing loans. Short-term loans are of limited value for borrowers desiring to acquire machinery, livestock, and land or make major improvements in land and buildings. The Land Bank in the Philippines wholesales funds through a variety of NGOs for retail lending to land reform beneficiaries, but only for short-term operating loans. Long-term land acquisition loans are granted by the Bank and it experiences serious problems in their recovery. Therefore, the microfinance innovations to date are of limited value for financing land in a market-driven land reform as is being implemented in South Africa. For the same reason, they will probably be of limited value in solving the financial problems of recipients of land in other transitional economies. Therefore, although microfinance has succeeded in reaching some of the poor with small loans, it has not yet contributed much to improving equity in asset acquisition.

In summary, through innovation microfinance has found ways to solve, or at least reduce, some of the information and transaction cost problems that have plagued agricultural lending in many low income countries. It is not yet clear, however, how far these new technologies can really extend the financial frontier into specialized agricultural areas. Nor is it clear the extent to which most microfinance organizations will ever achieve sustainability. Some analysts argue that expanded outreach contributes to sustainability through economies of scale. Others believe that there is a tradeoff between outreach and sustainability so that microfinance organizations over time will shift their portfolios away from poor borrowers and small loan sizes in order to reduce costs and achieve higher levels of operational efficiency.

A large amount of experimentation is being undertaken by microlenders. Several that historically made only small group loans are now experimenting with making larger individual loans to their best customers. Some organizations that operate exclusively in urban areas are experimenting with rural and agricultural lending. These experiments will eventually reveal the extent to which the recent microfinance innovations are capable of resolving the basic challenges of expanding financial services for agricultural and rural development.

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